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Assumptions Involved in Achievement-Test Construction

By RALPH W. TYLER

Many people now distrust the soundness of educational research involving the use of educational tests, because they had been led to believe that the development of tests meant the complete substitution of scientific method for personal opinion in education, that educational testing invariably meant objective and reliable data, and that unsound conclusions were no longer possible with these new instruments. This misplaced confidence has had harmful effects. In recent years the contradictory conclusions drawn by investigators using educational tests and the lack of agreement among testing experts have caused many teachers and administrators to believe that educational tests and educational research are no less fallible than opinion and therefore have little to contribute to the development of sound educational practice.

A new attitude toward educational testing is necessary. This attitude must avoid misplaced confidence, on the one hand, and cynical distrust, on the other. This new attitude should be guided by an intelligent understanding of the philosophy and methods of educational testing. This means that research workers and laymen alike should recognize the fundamental assumptions involved in the construction and use of achievement tests. Furthermore, if testing is really to contribute to educational theory and practice by developing a body of valid techniques, objective data, and sound conclusions, the progress of research in this field must be accompanied by the testing of one assumption after another so that progressively there will be fewer critical points which are not supported by adequate evidence.

The development of a science always involves a series of assumptions. The validity of the conclusions depends upon the

validity of the assumptions. The science progresses both through the addition of new data and through the testing of previous assumptions, so that bit by bit the shaky scaffolding of untested assumptions is replaced by firm masonry. Educational research has been constantly in jeopardy through its failure to make explicit its fundamental assumptions. Each research worker either accepts the findings of previous investigators without examining their assumptions to determine their acceptability for the purposes of the new investigation, or makes a new investigation without reference to the implications of previous but related studies. Consequently, the body of findings and techniques is almost inextricably mixed up with a confused mass of assumptions and half-truths. Nowhere is this better illustrated than in educational testing.

Is it not time for us to pass from this adolescent confusion into the maturity of a carefully integrated science? Such an effort requires the recognition by each investigator of the fundamental assumptions involved in his study and the explicit statement of these assumptions. Each worker should be encouraged to strengthen the growing structure of research by testing certain of the assumptions previously made and by interpreting his findings with due regard for the pertinent assumptions involved in his own and in previous investigations.

Some of the major assumptions involved in achievement-test construction will be mentioned in this paper and possible procedures which might be followed in testing these assumptions will be mentioned. Several assumptions regarding the validity of achievement tests are common. It is generally assumed that a single test is a valid test of a school subject. Thus we speak of a test of arithmetic ability, or reading ability, or a test of American history. Now, a valid test of a subject implies that the test measures the student's attainment in all of the important phases of the subject, each of which is adequately and with proper emphasis represented in the test. A school subject, however, usually involves a variety of objectives. The objectives in reading commonly include: interest and enjoyment in reading about various topics, the ability to get the main idea from different types of selections, the ability to find and understand specific details, the ability to organize and to evaluate the ideas obtained from reading, the ability to catch the mood or

feeling tone of certain types of reading selections, the ability to judge and appreciate the quality of various types of reading selections, and knowledge of standards which may be applied to reading materials. If a single test is to measure such a complex of outcomes, it must include exercises which adequately test the student's attainment of these various objectives and be so chosen as to give due weight to the various aspects of the subject. But there is no standardized weight to be given these different aspects of reading. Some instructors emphasize certain outcomes whereas others attach greater importance to others. The assumption that any single test is a satisfactory test of a subject is obviously an important but untested assumption.

Fortunately, this assumption is not necessary in building educational tests. It is not necessary to attempt to construct a single test to cover a subject, but tests may be built to measure the student's attainment of particular objectives or of combinations of them. In place of a single test of reading there may be tests of the student's interest and enjoyment in reading about various topics, tests of his ability to get the main idea from various types of reading selections, and so on. This procedure has the added advantage that the tests may be used by schools having distinctly different evaluations for the particular objectives. The school which emphasizes interest and enjoyment in reading may give the results of the tests of this ability greater weight than schools not emphasizing this outcome, although both schools may be using the same instrument for testing.

A SECOND major assumption often made when constructing achievement tests is that there exists a satisfactory criterion of validity with which a new test may be correlated. This gives rise to the concept of the coefficient of validity which frequently is the correlation of the test results with the marks given the pupils. This assumption is often not acceptable. The purpose of achievement tests is to give the teacher a more valid and accurate instrument for determining the student's achievement. Any test which correlates highly with the marks given by the teacher is not likely to be an improvement over the teacher's judgment. In place of this assumption, the criterion of a valid test should be the reaction of students in a variety of situations appropriate to the objectives of the subject. The essential assumption in achievement-test construction here is that the

student's reaction in a sampling of the situations representative of the objectives is an adequate index of his characteristic reaction in all situations representing the objective. This latter assumption may be tested for each new test by extending the sample of test situations indefinitely and determining the effect.

ANOTHER assumption with reference to the validity of tests is that tests which do not directly evaluate the student's reactions in situations representative of the objectives are nevertheless satisfactory indexes of these reactions. For example, the objective to be measured by a vocabulary test is an understanding of the meaning of a variety of words. The type of understanding required will vary with the word, but in general it means that the word, as a symbol, will stimulate in the student certain appropriate reactions. The purpose of words used in the directions for making a radio is to stimulate the student to do certain operations; words used in describing a theory are to direct the development of ideas; words in poetry are to stimulate an emotional reaction. The ordinary vocabulary test, however, does not provide a means of evaluating such a range of reactions. The most common type of exercise in vocabulary tests requires the student to choose the nearest synonym for a given word from a list of four or five alternatives. This test may be a satisfactory index of all of the reactions expected in an adequate vocabulary test, but I know of no convincing evidence in support of it.

Test constructors have usually been content to set up a simplified device for testing purposes, but they have rarely attempted to determine the validity of these devices by correlating them against the results of the evaluations of the student's reactions in situations which are adequately representative of the objective to be tested. The assumption can and ought to be tested in any research program of test construction. There are times when a testing device which is not perfectly correlated with direct measurements of the student's achievement may be used because it is practicable to administer, whereas the direct measurement is not. It is, then, possible to recognize the rough character of the index by making due allowance for the variation in validity through the use of a standard error which has been computed on the basis of the correlation between the direct measurement and the more practicable device.

A SECOND series of assumptions are concerned with the evaluation of test responses. It is commonly assumed that the method adopted for marking a given test will give a satisfactory evaluation of the student's responses in the light of the objective being measured. This assumption is rarely tested. For test exercises which cannot be scored by means of a key the marks assigned by one reader often differ from the marks assigned by another. Obviously, they cannot both be equally valid evaluations. In such a case, it becomes necessary to establish a criterion for evaluation against which any marking procedure may be checked. The most satisfactory criterion for reactions which must be evaluated by personal judgment is probably the composite evaluations of an infinitely large number of trained judges. Considering this large group as the total population in the statistical sense it is possible to determine the number of judges needed to give evaluations which are as close to the total composite as desired.

Even tests which are scored by means of a key ultimately depend upon personal judgment in determining the degree to which the possible responses represent the attainment or non-attainment of desired objectives. Consider a multiple-response test in which the alternative responses include true statements and misconceptions. Students may check true statements, leave statements unchecked, or check misconceptions. In the light of the objective being tested, what is the relative value which should be assigned to these three possible responses? In the opinion of instructors in certain sciences the student who has a misconception is more unfortunate than the student who knows that he does not know the answer. These instructors assign the highest value to those checking the true statement, the next highest value to those leaving the exercise unchecked, and the lowest value to those checking a misconception. On the other hand, I have known certain instructors in other subjects who express the belief that it is better for the student to try to formulate an answer even though it is a misconception than to make no response. These teachers give the highest value to those checking the true statement, the next highest value to those checking a misconception, and the lowest value to those leaving the exercise unchecked.

This variation in practice illustrates the fact that even a so-called "objective test" requires personal judgment in its

evaluation. To check the assumption that a certain marking method gives a satisfactory evaluation of the student's reply it is possible to use as the criterion the composite evaluation of an infinitely large group of trained judges who are guided by clear statements of the objective being measured. Variations from this criterion on the part of any particular scoring method may be measured, and an estimate of the amount of error likely to be involved may be made.

A SECOND assumption involved in the evaluation of responses is that the particular numerical values assigned to test responses provide a satisfactory scale for measuring the degree to which the students have attained the objectives. This assumption involves a number of related problems which have not been exhaustively investigated. Some test constructors give equal weight to each exercise in the test, others weight an exercise on the basis of the relative number of persons who answer the exercise satisfactorily. Some test scores are based upon a reference point which is the mean achievement of a group of students. Others attempt to express a reference in terms of an absolute zero. Some test scores are derived from the assumption that the quality being tested is normally distributed, others are derived from the assumption of equal-appearing intervals. These merely illustrate the variety of methods in use.

It is possible to test the validity of these various methods of assigning numerical values by establishing in each case the limits of possible error involved in these assumptions. This can be done by recalculating all the numerical values for the test responses using assumptions which are at the two greatest possible extremes from the assumptions used in the scoring of the tests. These two sets of values obtained from the extreme assumptions can each be correlated with the values originally used. This gives a means of estimating how widely different it is possible for the test results to become if the assumptions upon which the numerical values have been calculated are changed.

THE major assumption relative to reliability in test construction is that the test provides an adequate and representative sample of the student's reactions to all the situations in which the desired objective may be expressed. There are two factors which through their variation affect the reliability of a

given test. One of these is the range of situations in which the objective may be expressed, and the other is the variation in the reaction of the student to a given situation. A test of ability to multiply, for example, should adequately sample the range of situations in which the objective may be expressed. It should sample the different multiplication combinations; the different numbers of digits in the multiplier and multiplicand; the different situations in which multiplication may be used as, for example, buying situations, the making out of a budget, and so on. The test should also sample the varying reaction of the student to the same situation. The latter variation may be noted when the student, today, is able to multiply 7 by 8, and, tomorrow, fails to do this exercise correctly. The testing of the assumption of reliability is primarily a problem in sampling which may be attacked by the usual techniques of sampling, namely, by choosing samples which include all the known variables and selecting cases within the samples by some random method which is likely to include all pertinent variables not now known to effect the result. The size of the sample needed may then be calculated by the use of formulas for the standard error of the mean.

A FINAL series of assumptions concerns the interpretation of test scores. It is assumed that the test scores provide measurements in fine enough units so that the student's progress may be noted and so that the tests may be used for experiments in methods of instruction. An examination of several widely used standardized educational tests reveals the fact that measurements are being made in units so large that a single unit may represent the average progress in achievement which takes place during an entire semester. That is to say, the number of points of difference in the test score necessary to be statistically significant is no less than the average amount which a class gains in one half-year of study. It is apparent that such tests do not measure in fine enough units to show the student's progress from week to week, or month to month, nor to measure the differences between two months of instruction used in a subject for one year or less. The situation is like trying to measure the progress of a baby's weight from week to week on a scale measuring in pound units.

The assumption that the test measures in fine enough units

may be checked for any particular test by giving the test in various forms to the class at intervals of one week, or two weeks throughout the semester or year, and noting the changes in test score during the progress of the class. In case the test does not measure in units fine enough for the purposes intended it is possible to get more refined units of measurement by making a more detailed analysis of students' progress and providing test situations to cover these more detailed steps.

Concerning the units of measurement used in a test a second assumption is that any difference in test scores which is statistically significant is correspondingly of social value and desirable to have. The only way to test this assumption is to determine what the given units of measurement are equivalent to in terms of recognized social values. It might be discovered, for example, that a unit of improvement on a test is the equivalent of the progress made in ordinary class work during three days of instruction. The unit of improvement might be expressed in terms of its cost, or in terms of other equivalent values both material and non-material. When tests are being used in educational research, it becomes increasingly necessary that the units of measurement be expressed in understandable terms.

These four types of assumptions which are involved in the construction of achievement tests are not exhaustive, but they are sufficient to represent the nature of the fundamental assumptions which are commonly untested. If test construction is to develop a sound body of philosophy, techniques, data, inferences, and principles, it is essential that these assumptions be tested one by one, so that we may be able to separate findings and methods which are based upon valid assumptions from those which are untenable because the assumptions underlying them are not true. This is a task which challenges all who work in the field of achievement-test construction. [Vol. XII, No. 2]

Governmental Expenditures in Ohio for 1930

By H. H. DAVIS

THE governmental expenditures in Ohio for 1930 were discussed in an article which appeared in the December issue of this BULLETIN.[1] These expenditures were set up in a compact table in order to give a concrete picture of the entire situation. Since further details seem desirable regarding these figures, this article was prepared. For convenience of reference the table summarizing governmental expenditures from the earlier article is reproduced here (*see* Table I), and the major items will be taken up in order and analyzed.

Under the head *general government* the state expended, of the $3,320,972 given in Table I, $61,275 for its legislative branch, $56,613 for the executive branch, $114,534 for the auditor, $55,195 for the treasurer, $103,829 for the secretary of state, $150,030 for the attorney-general, $510,234 for special accounting and auditing costs which were largely accounted for by inspection of accounts of local governmental units ($472,207) paid for by the units themselves. Judicial expenses were $1,083,765, of which those of the Supreme Court were $144,717. The assessment and collection of revenues cost $480,141, and the maintenance of general governmental buildings amounted to $351,501. These were the major items of expense which the state included in its expenditures for general government for that year.

The county item was made up of a number of subitems of which general executive accounted for $6,277,525 which covered the compensation, expenses, and supplies of the county auditor, treasurer, the probate judge, and other officers. Elections were paid for by the county, and the expenses for 1930 were $2,842,208. Advertising of a legal nature, such as financial statements, lists of delinquent taxes, and the like, amounted to $205,864. For the maintenance of county buildings and lands, primarily for county homes and jails, $2,734,266 was expended. The costs for the Court of Appeals, the Court of Common Pleas, and the Probate and Juvenile Courts with their

[1] "Governmental Revenues and Expenditures in Ohio," EDUCATIONAL RESEARCH BULLETIN, XI (December 7, 1932), pp. 421–25.

TABLE I

Governmental Expenditures in Ohio by Units of Government and by Function for 1930

Expenditures	State[a]	County[b]	City[c]	School District[d]	Township and Village[e]	Capital Outlay[f]	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
General government	$ 3,320,972	$ 21,319,484	$ 7,267,053	.....	$ 3,000,000	$ 1,592,745	$ 36,500,254
Health and sanitation	600,230	718,139	9,516,554	.....	800,000	12,775,033	24,409,956
Protection, persons and property	3,390,328	1,641,647	22,515,600	.....	1,400,000	3,039,623	31,987,198
Charities and corrections	11,261,851	14,676,811	5,748,751	.....	800,000	5,444,426	37,931,839
Highways, bridges, and streets	17,258,344	15,242,696	14,219,220	.....	9,000,000	79,180,900	134,901,160
Education	14,283,041	.....	3,271,993	$105,036,384	.....	25,373,561	147,964,979
Recreation	265,709	.....	1,979,788	.....	.....	2,837,073	5,082,570
Miscellany	5,446,214	2,911,356	2,583,588	.....	500,000	6,141,576	17,582,734
Total current	55,826,689	56,510,113	67,102,547	105,036,384	15,500,000	.....	299,975,733
Capital outlay	31,403,150	35,489,436	42,651,115	21,841,236	5,000,000	.....	136,384,937
Interest	276,893	9,301,481	23,345,766	11,367,616	4,000,000	.....	48,291,756
Grand total	$87,506,732	$101,301,030	$133,099,432	$138,245,236	$24,500,000	.....	$484,652,430

[a] *Financial Statistics of States 1930.* Tables 11 and 15 U. S. Department of Commerce. Bureau of Census.
[b] *Comparative Statistics Counties of Ohio, 1930.* (Various tables) Auditor of State Report by D. O. Heeter, Statistician.
[c] *Comparative Statistics Cities of Ohio, 1930.* (Various tables) Auditor of State Report by D. O. Heeter, Statistician.
[d] Reports in the Office of State Director of Education. Compiled by Grace Reed, Statistician.
[e] Estimated from various sources and records.
[f] Approximate.

clerks, constables, bailiffs, stenographers, and the like accounted for $5,839,051 of the county expenditure. Other important items were engineering comprising primarily the expenses of the county surveyor which amounted to $2,948,947; and other general services including roads, ditches, and the like, and agriculture which included agricultural societies, farmers' institutes, county agents, and similar items and which cost $999,627.

The city expenditures under this heading included, as expenses for council and clerk of council, $217,741 for mayor's office, $211,322 for city manager, $435,178 for auditors, and $170,903 for city treasurers. Law offices and accounts cost $593,109; planning commissions, $132,935; and civil-service commissions, $123,354. The city engineering department expended $987,310. Elections cost the cities $518,914, and for the operation and maintenance of buildings and lands, together with the rent and sundry items, $878,946 were expended.

In the village expenditures, items which were similar to those for the cities, except much smaller, were covered. The major township expenses were for trustees and numerous township supplies which account for somewhat more than $1,000,000.

Capital outlay for general government was largely accounted for by the expenditure of $1,196,272 for the new state office building. Minor government units did not make large expenditures for the purpose.

The major items in the state's portion of the account *health and sanitation* were $40,753 for the department of vital statistics, $203,981 for protection and treatment of communicable diseases (chiefly tuberculosis), $54,953 for food regulation and inspection, and $70,825 for the regulation of professions and occupations. The chief county items comprised the cost of hospitals and expenses for sanitary sewers. The city items, which amounted to much more, were subdivided into a number of parts the chief of which were the prevention and treatment of diseases costing $973,003; food regulation and inspection, $389,122; street cleaning and sprinkling, $2,525,373; garbage removal and disposal, $2,629,650; sewers, drains, and sewage disposal, $1,392,281. The township and village items included about the same constituents as the others. Definite figures regarding the distribution of this, as well as other township items and village items, were lacking. About two-thirds of the capital-

outlay expenditure under health and sanitation was made up of the sanitation expenses of the cities. The rest was largely covered by expenditures for hospital construction in various governmental units.

The principal items within the classification *protection of persons and property* in the state report were fire marshal, which cost $132,508; militia and armories, $660,545; fish and game warden, $191,531; prohibition enforcement, $141,273; inspection of mines, quarries, factories, and similar items which cost more than $1,000,000; and the regulation of various institutions such as banks, insurance companies, public-service enterprises, and other corporations which added a total cost of about $500,000. The county sheriff's office took care of this part of government for the county at a total cost of $1,641,647. The major components of this expense for the cities were the police and fire departments costing, respectively, $11,411,844 and $10,287,577. Inspection of buildings, smoke, wiring, weights and measures made up the rest of the cost. Fire and police departments in the villages again composed a large part of the expense; this was also true in the townships so far as fire protection was concerned, with an additional cost of several thousand dollars for hawk bounties.

The charity portion of the state item *charities and corrections* was divided between poor relief, $277,318; care of children, $633,719; and care of the deaf and of the blind, $492,870. Hospitals for the insane cost $3,763,962; for feeble-minded, $947,745; and for others, $585,858. The expense of corrections amounted to $3,629,653 for adults and to $637,051 for minors. The major portion of the expenditure of the county went for charity and covered county homes, children's homes, infirmaries, outdoor relief, mothers' pensions, and many other items which totaled $12,592,251. Their correctional expense including incidentals of the punishment for crimes and misdemeanors and the cost of the county jails and other correctional institutions reached a total of $1,426,073. Under this head the cities expended $3,531,980 for hospitals and pesthouses, $1,166,431 for outdoor relief, $623,681 for workhouses and detention homes, and $209,601 for almshouses and city infirmaries. The major expense for townships and villages was poor relief which took a considerable part of the entire township budget.

Naturally, roadways were the major expenditure under *highways, bridges, and streets* for the state, and they accounted for $15,848,447 of the sum $17,258,344 given in Table I. The rest of the item was made up of expenses of supervision and repair, for compensation with a few thousand dollars allowed for waterways. The major expenditure by the county under this head was for road repairs, including fees of engineers and assistants, court costs, compensation and damages, which amounted to a total of $13,362,610; maintenance, repairs, and replacements of bridges for culverts cost $1,880,086. The city expenditures show street repairing as most prominent, $9,621,155; street lighting next with a cost of $3,950,089; and bridges and viaducts accounting for a little over a half-million dollars. A large portion of village expenditures went for street repairs and street lighting, while the township money was practically restricted to highways; these expenses made up more than two-thirds of the entire $9,000,000 allotted to townships and villages under this head. The $79,000,000 capital outlay for highways, bridges, and streets was divided among the various governmental units, the state about $26,000,000, the county approximately the same, and the cities a little over $22,000,000 leaving the remainder for townships and villages. It would appear that this large capital expenditure was divided in three almost equal parts between state, county, and city.

The expenditures of the state for *education* were largely accounted for by grants to state colleges and universities amounting to $8,093,526, and appropriations for state aid to local schools taking $5,407,883. Libraries account for $30,000 and state supervision for $188,391. The county made no direct expenditure for education since the office of the county superintendent is supported by funds from local boards. The city expenditures were largely accounted for by cost of municipal universities ($2,932,918) and of libraries ($334,075). This does not by any means measure the entire cost of libraries, for in this state many of the libraries are not under city administration but have their own board and tax levy. Because Ohio has set up schools as separate institutions outside the jurisdiction of either cities or townships, we find the major expenditure for education listed under the school district ($105,036,384). This included in 1930 teachers' salaries, maintenance of school buildings, transportation, and many other items. The capital outlay

under education was largely accounted for by school-district expenses for sites and new buildings although the cities did expend somewhat more than $2,500,000 for university and library buildings during the year.

The expenses for *recreation* were not large for any governmental unit except the city. The state expenses were divided between educational recreation ($146,906) and general recreation ($109,295). The city cost was mainly accounted for by expenses for parks, $1,400,689. Capital outlay in this case amounted to about the same as the total current expense, and

[*Continued on page 56*]

Cost of Living Indexes and Teachers' Salaries

By T. C. HOLY

In a fall issue of this BULLETIN, H. H. Davis presented charts showing the relationship of living expenses and income for three large groups of Cleveland teachers. In this article he points out that "the greatest danger in the use of the index lies in the fact that most living-cost figures include only food or at the most food, clothing, and shelter."[1] It is the purpose of this article to discuss further these indexes and their applications to teachers' salaries.

The two most commonly used and, without doubt, the most reliable indexes of living costs are those compiled by the United States Bureau of Labor Statistics and the National Industrial Conference Board. Between 1890 and 1913, the index computed by the Bureau of Labor was based on the retail prices of food commodities as collected from a group of large cities. Beginning in 1914, however, this was expanded to include not only food, but clothing, rent, fuel and light; articles of house furnishing; and miscellany. For that year the data were collected from 19 large cities distributed throughout the United States. This number has increased from time to time until, in 1920, 51 cities were included.

[1] "Teachers' Salaries and Living Costs," EDUCATIONAL RESEARCH BULLETIN, XI (October 26, 1932), p. 345.

The National Conference Board in the determination of its index uses the statistics on food prices collected by the Bureau of Labor Statistics, but at regular intervals sends inquiries to a large number of cities to obtain the relative cost of shelter, fuel and light, and the like. Since the index computed by the Bureau of Labor is the more widely used of the two, its method of determination will be discussed in more detail. Using 1913 as

TABLE I[a]

INDEX NUMBERS BY GROUPS OF ITEMS ENTERING INTO COST OF LIVING IN THE UNITED STATES, 1913–32

Date[b]	Food	Clothing	Rent	Fuel and Light	House-furnishing Goods	Miscellaneous	All Items
Average, 1913	100.0	100.0	100.0	100.0	100.0	100.0	100.0
December, 1914	105.0	101.0	100.0	101.0	104.0	103.0	103.0
December, 1915	105.0	104.7	101.5	101.0	110.6	107.4	105.1
December, 1916	126.0	120.0	102.3	108.4	127.8	113.3	118.3
December, 1917	157.0	149.1	100.1	124.1	150.6	140.5	142.4
December, 1918	187.0	205.3	109.2	147.9	213.6	165.8	174.4
December, 1919	197.0	268.7	125.3	156.8	263.5	190.2	199.3
December, 1920	178.0	258.5	151.1	194.9	285.4	208.2	200.4
December, 1921	149.9	184.4	161.4	181.1	218.0	206.8	174.3
December, 1922	146.6	171.5	161.9	186.4	208.2	200.5	169.5
December, 1923	150.3	176.3	166.5	184.0	222.4	201.7	173.2
December, 1924	151.5	171.3	168.2	180.5	216.0	201.7	172.5
December, 1925	165.5	169.4	167.1	186.9	214.3	203.5	177.9
December, 1926	161.8	166.7	164.2	188.3	207.7	203.9	175.6
December, 1927	155.9	162.9	160.2	183.2	204.6	205.1	172.0
December, 1928	155.8	161.9	155.9	181.3	199.7	207.1	171.3
December, 1929	158.0	160.5	151.9	178.7	197.7	207.9	171.4
December, 1930	137.2	153.0	146.5	175.0	188.3	208.1	160.7
December, 1931	114.3	135.5	136.2	168.0	167.1	205.4	145.8
June, 1932	100.1	127.8	127.8	157.1	153.4	202.1	135.7

[a] United States Department of Labor, Bureau of Labor Statistics. *Retail Prices and Cost of Living.* June, 1932, p. 14.
[b] The December index is given for all the years except 1932.

the basic year, a separate index is determined for six items: food, clothing, rent, fuel and light, house furnishings, and miscellany. Table I shows how these have varied since 1913. It will be noted that food prices in June, 1932, were the same as in 1913, clothing and rent 27.8 per cent above the 1913 level, fuel and light 57.1 per cent above, house furnishings 53.4 per cent above, miscellany 102.1 per cent above, and the total index 35.7 per cent above the 1913 base.

The next step is that of combining these six into a single index number representative of the cost of living as based on these data. Since expenditures are not uniformly distributed among these six items, it is necessary to have some weighting scheme. The one used in this index is based on an analysis of the expenditures of 12,096 families of workingmen for the year 1918–19. These families expended on the average 38.2 per cent of their living costs for food, 16.6 per cent for clothing, 13.4 per cent for rent, 5.3 per cent for fuel and light, 5.1 per cent for house furnishings, and 21.3 per cent for miscellaneous.[2]

The averages are then applied to the index numbers for each of the six items and the result becomes the cost of living index. For example, the index of June, 1932, is derived in the following manner:

Food	100.1	x 38.2 per cent =	3824
Clothing	127.8	x 16.6 per cent =	2121
Rent	127.8	x 13.4 per cent =	1713
Fuel and light	157.1	x 5.3 per cent =	833
House furnishings	153.4	x 5.1 per cent =	782
Miscellaneous	202.1	x 21.3 per cent =	4305
		100. per cent	13578
June, 1932, Index	135.7		

According to this weighting, food, clothing, and shelter (rent, fuel and light) account for 73.5 per cent of the total living costs of these 12,096 families from whose expenditures the weightings have been made.

From the charts in the article by Mr. Davis, already referred to, it will be seen that these three items, even in the case of the lowest salaried teacher in each of the three groups—unmarried women living with parents or other near relatives, unmarried women not living with parents or other near relatives, and married men not living with parents or other near relatives—make up only about 50 per cent of the total living costs as compared with 73.5 per cent used in the index, and that the relative proportion expended for these items decreases with the increase in salary. Unmarried women teachers receiving the maximum of the high-school schedule and living at home expend approximately one-third of their total living expenses for food, clothing, and shelter, as compared with the 73.5 per cent used in the calculation of the index.

[2] United States Department of Labor, Bureau of Labor Statistics. *Cost of Living in the United States.* May, 1924. p. 466. (Bulletin 357)

Miscellaneous expenses of these 2,602 Cleveland teachers included in the three groups, ranged from approximately 45 per cent to 65 per cent of their living costs as contrasted with the 21.3 per cent used in calculating the Bureau index. Like proportions were also found to obtain for the teachers of Cleveland Heights and of Lakewood, where salary studies similar to that of Cleveland were made.

Under the heading *miscellaneous* are included such items as insurance, interest, taxes, professional costs, tuition, and charity. Everyone knows that these items have not shown any reduction, and this fact is borne out by the index for this item shown in Table I. Some, like taxes and charity demands, have actually increased within recent years. Since miscellaneous items make up a larger proportion of teachers' living costs than the 21.3 per cent used in the index, it is evident that the weighting given by the Bureau of Labor is not applicable to teachers.

IN AN excellent article by Walter Crosby Eells entitled "It Would Be Unfair to Reduce Teachers' Salaries Now," he shows what the index would have been in June, 1932, if the distribution of the living costs of the teachers of Fresno, California, were substituted for that of the 12,096 families now used by the Bureau. The index as derived by this plan would have been as follows:

Food	114.3x16.2 per cent =	1852
Clothing	135.5x11.9 per cent =	1612
Rent, fuel and light	146.2x16.4 per cent =	2398
Miscellaneous	205.4x55.5 per cent =	11398
		17260
Fresno teachers' salary index	172.6[3]	

This index of 172.6 is 36.9 points, or 27.2 per cent, higher than the one calculated by the methods used by the Bureau of Labor.

He also shows a comparison, year by year since 1913, of teachers' indexes of living costs, computed in the manner just described, with those derived by the Bureau. In all but five years of this twenty-year period, the teachers' indexes are appreciably higher than those of the Bureau, due to the smaller proportions of income devoted to food, clothing, and shelter.

In the light of these facts, it is unfair to expect teachers' salaries to rise and fall in strict accordance with the index of the Bureau of Labor as now derived.

[3] *Nation's Schools*, X, No. 3 (September, 1932), pp. 17–22.

EDITORIAL COMMENT

Typewriting

THE Freeman-Wood study of the use of the typewriter in the classroom, recently published by Macmillan's, is worthy of editorial comment as a study of a new and promising educational tool. While handwriting is the universal form of personal communication, typewriting has been growing rapidly in popularity for the last decade. With no statistical data at hand, one may venture the guess that half the students in college use the typewriter as their normal method of written communication. A smaller percentage of high-school students and a still smaller percentage of elementary-school children have learned to use it with facility.

The Freeman-Wood study introduced typewriting into the classroom as a technique on a parity with handwriting. The children instead of using only handwriting to record their work utilized the typewriter as another means, and the study indicated certain substantial benefits which accrued to the learning process.

In general, the typewriter makes it easier for the children to record on paper the ideas which they wish to express. Anyone who has watched young children labor to form the letters of the alphabet understands the heavy task imposed upon them: it is much easier to strike a letter on a typewriter than it is to trace the character by hand. If one has examined the letters and figures written by children, he recognizes the illegibility of the product and knows of the confusion and errors which result from it. The characters formed by the typewriter are vastly more legible and are, therefore, more easily read by children in their subsequent use. Then, too, the multiplicity of conventions which must be controlled by children in order to produce a neat record—straight lines, proper spacing between words, even margins, capitalization—is so great that for years the child is overpowered by the task; many of these conventions are automatically cared for by the typewriter, and others are more easily controlled. In short, the typewriter conspicuously simplifies early learning and gives the child much earlier the needed pleasure of preparing satisfactory products.

As a result of these fundamental advantages the 6,000 children experimented with in 180 classrooms using 2,000 typewriters (one typewriter to three children) several expected results were effected. One of the most striking features was the strength and duration of the children's interest in the activity. They wanted to come early, stay late, and remain in at recess to work on the machines. The amount of writing done, the number of "original" themes, the length of the pieces of writing were all greater, were significantly greater than in the control groups. This was, as would be expected, especially true in the lower grades.

Of more interest to the school man is the effect of the use of the typewriter upon handwriting. One would expect that typewriting would be prejudicial to the interests of handwriting. But such was not the case. In frequent tests the children of the experimental group could write as well and as rapidly by hand as could the children in the control group who did not use typewriters. And we are assured that no unusual emphasis was placed upon handwriting by teachers of the experimental groups to bring it up to standard.

The typewriter is beneficial in the content subjects. The experimental children spelled more efficiently. They made larger gains in arithmetic in grades three through six. Many more project books of better quality were produced. Art subjects lend themselves peculiarly to contributions from the machines. The study inevitably leads one to the conclusion that when the cost factor has been controlled, particularly in these hard times, typewriters will rapidly multiply and become accepted items of classroom equipment.

W.W.C.

* * *

For the past eleven years the Educational Research Bulletin has made its appearance fortnightly except during the summer months. This year because of the serious limitations of the funds of the Bureau of Educational Research and of Ohio State University, as well, the Bulletin will appear monthly. The new date of publication will be the second Wednesday of each month except during June, July, and August. When good times return, we shall go back to our fortnightly issues.

J.H.M.

READINGS

CLEMENSEN, JESSIE WILLIAMS. "Study Outlines in Physics—Construction and Experimental Evaluation," *Science Education*, VI (December, 1932), pp. 453–61.

The subject-matter of physics was divided into eight units and a study outline was developed for each unit. A unit consisted of a series of problems each of which contained questions about that problem. An example of a problem of a unit is given in the article; this problem is titled "Buoyancy" and consists of a group of "essay" questions to which the students may respond by stating facts and the principles of physics which help to explain these facts. The study outlines were evaluated by an experiment which used groups of students in high-school physics and compared the achievement of those who had used the study outlines with that of the group who had not. The difference in achievement was statistically significant as given by large critical ratios. The achievement at the end of the experiment, however, does not take into account achievement at the beginning of the experiment. The progress the students made may have been a more desirable measure by which to evaluate the outlines. Although no description of the pairing of the students in the experiment is given, it appears that some attempt was made to determine the adequacy of the control factors used.

The difference in achievement of the students who had the outlines and those who did not have the outlines was not evaluated in terms of recognized social values.

Three measures were used at the close of the experiment; a standardized test, an essay test, and a questionnaire. Nothing was said of the objectives the standardized test measured, nor of the reliability. Considerable time and effort was spent in analyzing the essay test to objectify the scoring. If this test measured the objectives of the study outlines, the extent of the analysis suggests the need for experimentation to devise more practical instruments of measurement which are valid.

Although no claim is made that two of the objectives of the outlines are the acquisition of facts and principles and the application of facts and principles, the questions in the outlines clearly indicate these objectives. The evaluation of the outlines could have been made by the measurement of the progress of the students in reaching these objectives.

HAMON, RAY L. "How Can We Achieve Satisfactory School Sanitation?" *School Executives Magazine*, LII (December, 1932), pp. 137–39, 150.

Written in an interesting style this article clearly presents the varied problems of school sanitation. The author stresses the fact that school sanitation is a co-operative enterprise requiring the combined efforts of many people, including the architect, the person or persons who select the site, the contractor, the janitor, the teachers, the pupils, and the superintendent. Improvement of janitorial service by requiring certain standards of general and special training is recommended.

CLARK, CLARENCE C. "Sound Motion Pictures as an Aid in Classroom Teaching," *School Review*, XL (November, 1932), pp. 669–81.

This article reports some results of an investigation into the relative merits of sound films, silent films, and demonstrations. A significant conclusion is: "When sound films of the lecture type, all explanations being given by an unseen speaker, are compared with identical silent films in which all explanations are given by printed captions, the sound films are less effective than are the silent films in conveying specific information."

BILLETT, ROY O. "Plans Characterized by the Unit Assignment," *School Review*, XL (November, 1932), pp. 653–68.

The writer points out that the unit assignment usually consists of: directions for study, references for reading, a list of supplementary projects, an outline of minimum essentials, and a tentative time allotment." It also may possess one or more of the following characteristics: an "approach paragraph" to stimulate the pupil's curiosity and interest; an introductory statement of the objectives of the unit; a short list of basic questions; necessary explanations; a word-study list or a vocabulary of difficult words; experiments to be performed; topics for discussion, dramatization, or demonstration; notice of special difficulties to be encountered; samples of how to do the work required; lists of materials and apparatus needed; assignments of individual reports to be made in class; additional elective work; references to correlation with other subjects; and a test on the assignment.

SLICHTER, SUMNER H. "Underlying Causes and Historical Background of the Depression," *Teachers College Record*, XXXIV (December, 1932), pp. 212–27.

A professor of business economics discusses the industrial and financial difficulties now facing the world. He points out some of the causes for the present depression and surmises what might have been the effect upon our present situation had various countries and organizations followed different programs in meeting their crises.

DAVIS, H. H. "New Sources of School Revenue and Tax Reduction for Real Property," *American School Board Journal*, Vol. LXXXV, No. 3, pp. 25, 79; No. 5, pp. 44, 72; No. 6, pp. 29, 66. (September, November, December, 1932)

This series of articles discusses in turn the inheritance tax, the income tax, and the sales tax as they apply to schools. Taxation is as old as civilization, yet no system yet evolved has been entirely satisfactory. In times of crisis in the support of government activities the system of taxation becomes the center of attention. Unfortunately, the taxpayers know so little about the subject that they are too frequently the victims of selfish groups who shift the burden unfairly.

The fact that public-school support comes entirely through tax revenues makes it essential for those interested in education to study thoroughly the problems of taxation. These articles present in a clear and easily understood manner these three principal kinds of taxes, the history and theory of each, together with numerous examples of how each operates in actual practice.

Arguments for and against each type of tax are given without bias, but the author believes that "we may expect an increasing tendency to relieve real property taxes, and provide school revenue by collecting various taxes on a state basis and distributing them through the schools." In order to relieve the burden now placed upon real property and to find other sources of adequate and stable school support, the author believes that the income tax is the most logical. Anyone uninformed on the subject of taxation will find his knowledge of this important subject greatly augmented by reading this series of articles.

In Paper Covers

NATIONAL EDUCATION ASSOCIATION. "Facts on School Costs," *Research Bulletin of the National Education Association*, X (November, 1932), pp. 205–26.

The present economic conditions make especially timely this study of facts on the cost of public schools as related to certain other items.

Among the numerous findings of this study are such interesting facts as the following: The cost of all tax-supported public schools is 3.35 per cent of the national income. Slightly more than two per cent of the national wealth exists in the form of school property. Federal, state, and local tax collections amounted in 1930 to approximately 13 per cent of the national income, nearly half of which were made for the support of local government. Annual expenditures for public education amount to approximately 25 per cent of the taxes collected for all public purposes. For each dollar spent for public schools, we spend $1.35 for life-insurance premiums, $2.22 for building construction, $5.00 for the purchase and maintenance of passenger automobiles. The causes of increase in school costs since 1914, in order of their relative importance, are: the depreciation of the dollar, increased attendance, and improved services.

This entire study is exceedingly valuable at the present time and should be widely distributed among the public generally as well as among school people.

WILLIAM E. ARNOLD

MINARD, RALPH D. *Race Attitudes of Iowa Children.* Iowa City, Iowa: University of Iowa, 1931. 101 pp. (University of Iowa Studies, Studies in Character, IV, No. 2)

The purpose of this study was to measure the race attitudes of junior and senior high-school pupils. A major portion of the research was devoted to the construction of a test to validly and reliably measure these attitudes. The term "race attitude" was defined as "the organization of experience, either individual or social, whereby one race or member of a race expresses a relation or effects an adjustment to the people of another race." The objective to be measured was defined in terms of student behavior as the reaction that a pupil could make to a moot paragraph depicting a social situation in which the race question is dominant. After the next step in test construction, that of sampling life situations in which the behavior could be expressed, was taken, the situations were classified according to the Iowa Plan for Character Education. Each moot paragraph was analyzed to discover the

mode of expression of race attitude and the race involved in the situation. The assignment of values to the manner of answering the questions to the moot paragraphs was made by deriving a norm from the opinions of individuals who are actively interested in the field. The reliability of the test is above .90 on each of three methods of scoring.

Pupils from representative geographical sections of Iowa constituted the population studied. Although on the average the race attitudes of these pupils are far below that of the criterion group, large individual differences were found among pupils. The variability in attitude among those of the same intelligence level diminishes the probability of determining an individual's attitude from his intelligence. The relationship is positive .34. No relationship was found between a pupil's socio-economic status and his attitudes toward races. Race attitudes were not found to be affected by sex, except that those of the girls were more homogeneous.

This report will be of interest to those concerned with test construction. It will be helpful to teachers of the social sciences in constructing their own classroom tests.

FRED P. FRUTCHEY

CRAWFORD, ALBERT BYRON. *A Critical Analysis of the Present Status and Significant Trends of State Education Associations of the United States.* Lexington, Kentucky: University of Kentucky, 1932. 155 pp. (Bulletin of the Bureau of School Service, Vol. IV, No. 4)

This bulletin presents a splendid analysis of the development, growth, and trends of state education associations. The superintendent who would desire to justify to his teachers the necessity of supporting the state teachers' association will find splendid arguments in this bulletin. The teacher who wishes to know where her dollar goes when she enrolls in the state teachers' association will find the answer in this bulletin. The students of education should also turn the pages of this book for the many suggestions it has to offer such students. The discussion of the rapidly changing programs of state teachers' associations is interesting. It challenges the executive committee of all state teachers' associations to select the best possible secretary as the leadership of the state teachers' association must be placed with the secretary more than with any other officer of the association.

J. L. CLIFTON

The Commonwealth Fund, Twelfth Annual Report. New York: Commonwealth Fund, 1931. 85 pp.

In 1929 the Commonwealth Fund ended many of its lengthy carry-over programs, such as the child-health demonstrations. The following year, on which this report is based, marked the beginning of new projects with considerable emphasis on health service and medical education.

The work centers, however, around the same three subjects of public health, mental hygiene, and British-American relations. Facts are given concerning each branch of the Fund's work, including fellowships, the Division of Publications, the new Division of Public Health, and the also recently organized Statistical Service.

FRANCES KIRKPATRICK

JOHNSON, WENDELL. *The Influence of Stuttering on the Personality.* Iowa City, Iowa: University of Iowa, 1932. 140 pp. (University of Iowa Studies in Child Welfare, Vol. V, No. 5)

Johnson's study, which comprises the careful analysis of the case histories of 80 stutterers, should be of interest to any clinician or teacher who has to handle speech cases. The relationships of stuttering are traced, more or less tentatively, to a number of personality variables. Since the author is himself a stutterer—he has also written *Because I Stutter*—the viewpoint throughout is that of a stutterer interpreting his own problems and his own personality development. For this reason probably the greatest value of the study lies in the keener insight it gives into the stutterer's personal problems and into his reactions to the various social situations in which he finds himself.

DAEL S. WOLFLE

MARTENS, ELISE H. *Opportunities for the Preparation of Teachers of Exceptional Children.* Washington: Superintendent of Documents, 1932. 42 pp. (U. S. Office of Education Bulletin, 1931, No. 21)

Following an introductory discussion of the status of preparation of teachers for work with the deaf, blind, crippled, emotionally unstable, physically or mentally defective, or mentally gifted, detailed lists of the schools offering such special training are presented. The course announcements do not guarantee their presentation in any specific year, but will furnish a general guide to leaders interested in this specific preparation.

FRANCES KIRKPATRICK

ABEL, JAMES F. *Official Certificates, Diplomas, and Degrees Granted in France.* Washington: Government Printing Office, 1932. 14 pp. (U. S. Office of Education, Pamphlet No. 29)

This pamphlet is a brief but well-organized description of the official certificates, diplomas, and degrees granted in the French schools. It deals only with the official credentials, that is, those granted in accordance with national regulations, recognized by the national government, and conferring certain rights throughout France. In addition to written descriptions of the various awards, there is included a table which presents an analysis of all official certificates, diplomas, and degrees.

WILLIAM E. ARNOLD

DIEFENDORF, J. W. *The High School Situation in New Mexico.* Albuquerque, New Mexico: University of New Mexico, 1931. 58 pp. (University of New Mexico Bulletin, No. 194)

The reader will find in this pamphlet essentially what the title indicates. It is largely statistical, embodying tables which cover number and types of schools, enrollment, teachers, teaching-load, subjects taught, equipment, support, and other usual features. At least one unusual table is that relating to professional activities of teachers. The interpretation of tabular data are cogent and lucid, but slightly deficient as respects comparative showings. The reader must make the computations for himself, for example, in order to learn that approximately 86 per cent of graduates from the eighth grade entered high school; that 67 per cent of those entering high school continue

to graduation; and that 40 per cent of high-school graduates entered college. Further, the report is concerned with the school year of 1929–30, and shows little regarding how matters stand in comparison with former years.

A problem receiving special attention with entire propriety is that of the small high school. It is well that wise counsel should be broadcast in a state having only five schools enrolling as many as 400 pupils, regarding practicable enrichment of curriculums and reasonable costs. The reasonable cost in a state where "magnificent distances" prevail is admittedly higher than elsewhere.

F. C. LANDSITTEL

Books to Read

KANDEL, I. L., Editor. *Educational Yearbook of the International Institute of Teachers College, Columbia University, 1930.* New York: Teachers College, Columbia University, 1931. xiv+544 pp.

This volume, the seventh in the series of International Yearbooks edited by Mr. Kandel, continues the practice initiated last year of devoting all its space to the consideration of one major topic. This year the chosen topic is: "The Expansion of Secondary Education"; and the volume offers treatments of this phase of educational advancement in regard to fifteen countries, the United States, Japan, South Africa, Australia, two South American, and nine European countries including England and France but excluding Germany and Russia. Germany is excluded because "no significant progress has been made in the expansion of secondary education" [p. xi]. Russia is omitted without assigning any reason or recognizing its existence. As formerly the articles are written by specialists in the countries concerned. The facts are doubtless as presented. Several writers show a disposition to compare their own secondary schools with those of the United States and to draw conclusions not wholly favorable to us. The volume contains a body of valuable material on educational history and philosophy.

H. G. GOOD

LYFORD, CARRIE ALBERTA. *The School Dormitory.* Boston: M. Barrows and Company, 1932. vi+200 pp.

This is a short book on a long subject. The author gives hundreds of supplementary references which might well be followed up. The subject-matter pertains almost entirely to the various technical aspects of maintenance of dormitories in secondary schools although "many practices suggested can be effectively applied in the college dormitory." The four chapters concerning food management are in specific and usable form for one who has not had professional training in institutional management, and even suggestive to one who has had such training.

The author also gives in her three introductory chapters and in Chapters XVIII and XIX effective consideration to the possibilities of education for fuller personal and social life through the dormitory. She makes plain that we express in words a far higher conception of the self-education available through housing groups than we ever approximate. The reading of this well-written outline compels the reviewer, as a member of a university faculty, to ask herself and her associates the question which heads the fifth chapter,

"When they graduate they are taller, heavier, better informed, more polite, but are they abler to cope with the world and manage themselves?" This question might be answered in the affirmative through dormitory social education if we members of the faculty developed into habit-action the ideals we are able to express well in print.

ESTHER ALLEN GAW

SNEDDEN, DAVID. *Towards Better Educations.* New York: Teachers College, Columbia University, 1931. vii+427 pp.

This book is an attempt by a well-known critic of current conceptions of progressive education to present "a series of critical analyses of certain problems of American education which have acutely concerned progressive teachers during recent years." The problems which Mr. Snedden selects for analysis are almost as broad as education itself—so broad, in fact, that the treatment of each of them is brief and, as a rule, unsatisfactory.

The general scope of the book is indicated by a few characteristic chapter headings, such as, "Towards More Serviceable Interpretation of the Meaning of Growths, Learnings, Teachings, and Educations," "The School as Preparation for Life—and as Life Itself," "Educations to Socialize and Educations to Individualize," and "The Needs of the Child."

The book is made up largely of short, dogmatic statements of problems and "hypotheses," and "comments," which as a rule reflect the author's deep-seated and well-known enthusiasm for sociological determination of objectives. In general it may be said that much more success is achieved in criticizing the work of other educators from whose writing he quotes lavishly, than in presenting well-integrated solutions of crucial problems. One is inclined to close this poorly organized and repetitious volume with the conviction that Mr. Snedden has failed to present a feasible way out of our educational confusion.

H. B. ALBERTY

FLEMMING, CECILE WHITE. *Pupil Adjustment in the Modern School.* New York: Teachers College, Columbia University, 1931. vii+94 pp.

This is the first volume of the "Horace Mann Studies in Education, New Series." This first volume of the series sets a high standard of achievement. The introductory chapter deals with the functions of a department of psychological service and pupil adjustment, and a description of the departmental organization in the Horace Mann School. The second chapter treats in detail the classification of pupils. There is an outline of the testing program, and a highly informative discussion of the initial and later classification of pupils, methods of record-keeping, and illustrations of a few of the records. In commenting upon the methods of grouping the children, the author emphasizes the importance of adequate and reliable objective data, and carefully organized records of growth.

The problem of adjustment for individual children is discussed under three main headings in the third chapter: the initial consideration of problems in the Horace Mann School, the diversity of critical factors contributing to maladjustment, and remedial instruction in reading in the elementary school. The chapter is clear and to the point; it will be of interest to every student of elementary education because it clearly illustrates the problems involved,

and presents a description of the remedial work done for one pupil in reading. The report form used in this report will be of interest to teachers for it indicates the need for quantitative measures, and a simple technique for reporting on the progress of the child.

The remaining five chapters of the book deal with the integration of interests and activities of school staff for constructive effort toward pupil adjustment, the responsibility of the school for superior children, dynamic individual pupil records and reports, other functions of the psychological service, and a concluding chapter. The latter is the only weak spot in the book. In two and one-half pages it attempts to discuss some of the theories of education, particularly a philosophy of education.

The chapter devoted to pupils' records and reports is interesting. A detailed account of the method of reporting employed in the Horace Mann School is presented, and there are many illustrations of the report forms.

The launching of this series of publications follows closely the announcement of a similar program by the Laboratory Schools of the University of Chicago. In both cases, the initial volumes represented important contributions to "sound educational theory" and will be of service to public-school education.

L. E. RATHS

LEARY, DANIEL BELL. *Living and Learning.* New York: Richard R. Smith, Inc., 1931. xii+477 pp.

On leafing through this book for the first time, the reviewer noted with some interest the fact that the beginning chapters were opened with quotations from John Dewey. The reviewer's curiosity led him to look further, to note with what persistency the author carried on this procedure. It persisted to the eighth chapter, at which point Edward L. Thorndike comes upon the scene, and there remains for three chapters. At the conclusion of the tenth chapter, Thorndike makes his quotational exit, never to reappear. Dewey, McVannel, and Hobhouse are the principal actors henceforth.

The author is concerned with developing a

> philosophy of education which is also a philosophy of experience, showing, in mutual relationships, the institution of society, the place and significance of the school, and the fundamental and ever-present three-fold problem of original nature, social aims and purposes, and the techniques of experience and learning mediating between these two.

The author achieves his purpose by borrowing heavily from the views of Dewey. These views are interpreted with fidelity and with a certain lucidity not always found in the original. The degree of light shed by Leary on Dewey's views is not so great as to warrant the appearance of his book on that account only.

In working out a view of original nature compatible with his philosophy, the author uses, in some instances, terminology which, because of its previous connotation, is ill-suited to his purpose; for example, connections, circuits, conditioning. Use of the term "bond" seems to be studiously avoided.

There is not this same language difficulty in the author's treatment of the learning process. For example, "readiness, then, is the first necessity of learning"; "the second law or condition of learning is operative, namely: 'effect' "; "repetition of the same situation many times is usually necessary."

Perhaps the author can harmonize his views, as quoted, with the view of learning as "reorganization of experience" (implied in his philosophy of experience), but the reviewer does not see that he has done so in this book.

The list of "Readings and References" at the end of the several chapters are too general to be of much use to undergraduates. A few well-chosen ones should serve the purpose better. The "Topics and Questions for Discussion" are quite adequate. The bibliography, although not annotated, is exhaustive.

GLENN S. THOMPSON

ESSEX, DON L. *Bonding Versus Pay-As-You-Go in the Financing of School Buildings.* New York: Teachers College, Columbia University, 1931. vii+101 pp. (Teachers College, Columbia University, Contributions to Education, No. 496)

The two basic principles in this study are: first, the school-building needs of the community should be adequately provided for; and second, school buildings should be financed on a basis that will be fair and just to all concerned. After comparing at some length the relative merits of bonding and "pay-as-you-go" plan for capital outlay, the writer concludes that both have much to commend them and that no one plan is satisfactory or desirable under all circumstances. In the concluding paragraph mention is made of further research needed in the worth of money in the individual community. Since this point is really the crux of the problem, particularly in the large city school districts, it is regretted that some progress was not made in developing a technique for measuring this worth.

T. C. HOLY

* * *

Governmental Expenditures in Ohio for 1930

[*Continued from page 42*]

was made up almost entirely of city expenditures for recreation with a small amount for state monuments.

The *miscellaneous expenditures* included a large number of items such as state expenses for the development of natural resources in agriculture, forestry, fish and game; county expenses for attorney fees; inquiries for state examiners, hydrophobia treatment, boiler inspection, official boards, workmen's compensations, pensions, reliefs, judgments, and damages by the cities.

The foregoing analysis will, it is hoped, enable the reader to appreciate the wide range and large expense of the many governmental services. It is possible to recombine these in various ways; for instance, to show the entire cost of courts or of tax levy and collection. Such combinations are left to the interest and ingenuity of the reader.